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UNITED STATES DISTRICT COURT  
DISTRICT OF NEW JERSEY

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UNITED STATES OF AMERICA,

Plaintiff,

v.

WAVEFRONT, LLC, JIE YAO, and  
FENG SUN,

Defendants.

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Civil Action No.

**COMPLAINT**

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Plaintiff, United States of America (the “United States”), by its attorney, Craig Carpenito, United States Attorney for the District of New Jersey, and Mark C. Orłowski, Assistant United States Attorney, by way of this Complaint against defendants Wavefront, LLC (“Wavefront”), Jie Yao (“Yao”), and Feng Sun (“Sun”) (collectively “Defendants”), alleges as follows:

## **JURISDICTION AND VENUE**

1. The United States brings claims of fraud, unjust enrichment, and payment by mistake under the common law, and claims under the False Claims Act, 31 U.S.C. §§ 3729-3733, arising from the submission of false claims in connection with government contracts between Wavefront and the United States, which were awarded in part because Wavefront made material misrepresentations in its proposals.

2. The United States District Court for the District of New Jersey has subject matter jurisdiction over this matter pursuant to 28 U.S.C. § 1345, which provides for original jurisdiction of civil actions commenced by the United States of America, or by any agency or officer expressly authorized to sue.

3. This Court has personal jurisdiction and venue over defendants pursuant to 31 U.S.C. § 3732(a) because Defendants Wavefront, Yao, and Sun are located and transact business within New Jersey, and because the relevant conduct of Defendants, including acts proscribed by 31 U.S.C. § 3729 occurred in this district.

## **PARTIES**

4. Plaintiff is the United States of America.

5. Defendant Wavefront is a privately owned limited liability company that is, and was at all relevant times, located in New Jersey. Wavefront's listed address is 7 Johnston Circle, Basking Ridge, New Jersey 07920.

6. Defendant Yao is a resident of the State of New Jersey, and at all times relevant herein, maintained an ownership interest in Wavefront.

7. Defendant Sun is a resident of the State of New Jersey, and at all times relevant herein, maintained an ownership interest in Wavefront.

### **SUMMARY OF ALLEGATIONS**

8. By this action, the United States brings claims under the False Claims Act against Defendants for damages and civil penalties, common law fraud, unjust enrichment, and payment by mistake.

9. Defendants circumvented the regulations of the Small Business Innovation Research (“SBIR”) and Small Business Technology Transfer (“STTR”) programs by misrepresenting key elements of their proposals in order to receive SBIR and STTR contracts, and by misappropriating funds granted to them under the contracts that were awarded under the SBIR and STTR programs.

### **SUMMARY OF LAW AND THE SBIR AND STTR PROGRAMS**

10. The False Claims Act provides that any person who presents, or causes to be presented, false or fraudulent claims for payment or approval to the United States, or knowingly makes, uses or causes to be made or used false records and statements to induce the United States to pay or approve claims, is liable for civil penalties for each such claim, plus three times the amount of the damages sustained by the United States.

11. The False Claims Act defines “knowingly” to include acts committed with “actual knowledge,” as well as acts committed “in deliberate ignorance” or

“reckless disregard” of their truth or falsity. Liability attaches when a defendant seeks, or causes others to seek, payment that is unwarranted from the United States.

12. On July 30, 1953, Congress created the Small Business Administration (“SBA”) via the Small Business Act.

13. The Small Business Business Innovation Development Act of 1982 created the federal government’s SBIR program.

14. The STTR program was modeled after the SBIR program, and was created by the Small Business Technology Transfer Act of 1992.

15. The SBIR program requires that certain federal agencies reserve a portion of their research and development efforts for small business concerns. *See* 15 U.S.C. 638(f)(1).

16. The STTR program has a similar requirement that sets goals for federal agencies to reserve a portion of their research and development efforts for small business concerns through STTR contracts. *See* 15 U.S.C. 638(n)(1).

17. The SBIR and STTR programs’ goals are to stimulate innovation in the private sector, to strengthen the role of small businesses in research and development, to foster participation in both innovation and entrepreneurship by socially and economically disadvantaged persons, and to increase commercialization of innovations funded for research and development by the federal government.

18. To receive an SBIR grant, the applicant must qualify as a “small business concern,” defined by the SBA regulations. For example, to qualify for

SBIR funding, the applicant must have no more than 500 employees, and must be organized for profit. *See* 13 C.F.R. § 121.105 and 121.702(c).

19. Companies that are awarded SBIR contracts must also follow the SBIR program regulations for their project, including, but not limited to (1) the principal investigator must be primarily employed by the company, and (2) the company must itself perform 2/3 of the work for Phase 1 contracts or at least 1/2 of the work for Phase 2 contracts.

20. To qualify for an STTR grant, the applicant must also qualify as a “small business concern”.

21. A significant difference between the SBIR contracts and STTR contracts is that in an STTR contract, the applicant must partner with an accredited research institution. For STTR Phase 1 and Phase 2 contracts, the company must perform at least 40% of the work, and the partner institution must perform at least 30% of the work.

22. Approximately eleven federal departments and agencies participate in the SBIR and STTR programs, including the National Aeronautics and Space Administration (“NASA”), the Department of Defense (“DoD”), and the National Science Foundation (“NSF”).

23. The SBIR and STTR programs have three developmental phases.

24. Phase 1 is generally a six month to one year study to evaluate the scientific and technical data of an idea, with a current maximum award of \$150,000.

25. Phase 2 is awarded following a Phase 1, expands upon the Phase 1 research, and typically extends out two years in duration.

26. At all time relevant herein, Phase 2 awards had a maximum award of \$1,000,000.

27. Phase 3 attempts to commercialize the results of the Phase 2 research, and is funded by private sector or non-SBIR/STTR federal funding.

26. In order to obtain an SBIR or STTR grant, applicants respond to agency solicitations with business proposals.

27. The proposals outline, among other things, the research that will be conducted, the key personnel who will conduct the research and the facilities and equipment that will be used to conduct the research.

28. The proposals also contain a section with a proposed research budget that outlines the proposed expenses, including, among other things, personnel, labor cost, overhead, materials and equipment.

29. The proposals may also include Letters of Support and/or endorsements of the research project and/or the Principal Investigator ("PI") from commercial entities or persons that may provide monetary support in the future if the research is successful.

30. Awards for SBIR and STTR contracts are typically made by a panel of reviewers comprised of scientists, agency personnel, and subject matter experts in various scientific and engineering fields.

31. In evaluating the proposals for SBIR and STTR awards, the panel of reviewers rely on the truth and accuracy of the information contained in the proposals as a basis for awarding the contracts.

32. Specifically, the panel of reviewers considers, among other things, the technical merit of the research, the qualifications of key personnel, the facilities, the potential for commercialization, and the proposed budget.

33. Once a proposal is selected a government agency awards a contract, the proposal submitted by the applicant, which includes a budget proposal, typically becomes incorporated into the contract and is used as the statement of work.

34. The NSF refers to the awards as grants, whereas NASA and DoD refer to the awards as contracts. Awarded grants and contracts under the SBIR and STTR programs are hereafter referred to as contracts.

35. The budget summary in the proposals contains an allocation of requested funds to enable the government agency to determine whether the proposed budget is fair and reasonable.

36. The budget summary contains detailed information for each cost element, including, (a) direct labor to the PI and engineers or technical staff, (b) labor rates and hours proposed, (c) direct costs, such as materials, supplies, and lab fees, (d) overhead, (e) general and administrative costs, and (f) fees or profit for the company.

37. The small business is only entitled to research costs actually incurred.

38. The proposal forms the basis for the amount awarded under the contract, up to the maximum amounts for the Phase 1 and Phase 2 contracts.

39. The federal funding agency relies on the small business to provide accurate costs in the cost budgets in order to set the amount of the contract.

40. In submitting the proposal, the small business may be required to certify that all information in the proposal is true and accurate.

41. DoD proposals contain language acknowledging that “[k]nowingly and willfully making any false, fictitious, or fraudulent statements or representations may be a felony under the Federal Criminal False Statement Act (18 USC Sec 1001), punishable by a fine of up to \$10,000, up to five years in prison, or both.”

42. NASA proposals similarly include language stating, “I understand that providing false information is a criminal offense under Title 18 US Code, Section 1001, False Statements, as well as Title 18 US Code, Section 287, False Claims.”

43. NASA proposals also require that the applicant certify that they “will notify the Federal agency immediately if all or a portion of the work proposed is subsequently funded by another agency.”

44. In order to receive payment for work done on an SBIR or STTR project, the NASA contracts require the small business to request progress payments from NASA using a Standard Form 1443 (“SF 1443”), also known as a Contractor’s Request for Progress Payments, which is accompanied by invoice(s).



45. Similarly, to receive payments on DoD SBIR or STTR contracts, the small business must submit a material Inspection and Receiving Report Form 250, also known as a DD250, accompanied by invoice(s).

#### **WAVEFRONT'S SBIR/STTR CONTRACTS**

46. Wavefront was formed as a limited liability company in 2010.

47. Wavefront was co-founded by defendants Jie Yao and Feng Sun.

48. Defendant Feng Sun has at all relevant times herein, been the Chief Executive Officer ("CEO") of Wavefront.

49. Defendant Jie Yao has at all relevant times herein, been the Chief Technology Officer ("CTO") of Wavefront.

50. Upon information and belief, Wavefront was formed for the purpose of obtaining government contracts, including SBIR contracts, and conducting research in an attempt to develop technology.

#### **Contract N68335-11-C-0366**

51. On or about January 12, 2011, Wavefront submitted a proposal entitled "Long-Range Synthetic Aperture Lidar for 2-D Spatial Resolution Higher than Optical Diffraction Limit and 3-D Mapping", that ultimately resulted in the award of SBIR contract N68335-11-C-0366 (the "0366 Contract") by the DoD.

52. The proposal indicated that, as part of the work to be performed, Wavefront would be working on technology to develop an SA-LIDAR system with a photon counting integrated circuit ("PCIC") focal plane array.

53. As Key Personnel on the project, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

54. Wavefront additionally listed an individual named Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer.

55. Ting Li never performed any work on the 0366 Contract.

56. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey.

57. The address provided for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey.

58. The “laboratory” located at 7 Johnston Circle, Basking Ridge, New Jersey is actually Sun’s residence, and not a laboratory.

59. The proposal also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

60. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront’s proposal for the 0366 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

61. The budget in the proposal relied upon by the United States in conjunction with the award of Contract 0366 included line items for, among other things, labor for 3 hours of a senior opto-electronic engineer.

62. No work was ultimately performed on the 0366 Contract by personnel with the qualifications of a senior opto-electronic engineer.

63. Wavefront noted in its proposal that it would be fabricating semiconductor photodetectors at the Micro- and Nano- Fabrication Laboratory (“MNFL”) at the Princeton Institute for the Science and Technology of Materials (“PRISM”), located at Princeton University.

64. In order to use the PRISM laboratory, companies must pay a membership fee, which was \$25,000.00 per year in the years 2011 through 2015.

65. In the budget proposal relied upon by the United States in conjunction with the award of 0366 Contract, Wavefront proposed a \$12,500.00 direct cost for the “PRISM semiconductor nano-fab membership.”

66. The award of the 0366 Contract was based upon the budget proposal provided by Wavefront.

67. Wavefront’s budget proposal for Phase 1 of the 0366 Contract (which is what it was ultimately awarded) listed a total budget of \$79,986.25.

68. The 0366 Contract was awarded on May 12, 2011, with an original period of performance from May 12, 2011 through May 12, 2012.

69. The total budget allocation for the 0366 Contract was \$79,986.00, which approximates the budget proposal proffered to the United States by Wavefront, and which included \$12,500 for the PRISM laboratory membership.

Contract M67854-11-C-6544

70. On or about January 12, 2011, the same day Wavefront submitted a proposal for the 0366 Contract, Wavefront submitted another proposal to the DoD entitled “Hyper-Spectral Night-Vision Camera”, which formed the basis for the award by DoD of Contract M67854-11-C-6544 (the “6544 Contract”).

71. The proposal indicated that Wavefront averaged 5 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

72. As part of the work to be performed for the planned camera on the 6544 Contract, Wavefront’s proposal stated that it would be fabricating and testing a PCIC array.

73. As Key Personnel in the proposal for the 6544 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

74. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer.

75. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

76. The proposal for the 6544 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

77. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront's proposal for the 6544 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

78. The budget in the proposal relied upon by the United States in conjunction with the award of Contract 6544 included line items for, among other things, labor for 100 hours of an opto-electronic engineer at a rate of \$50/hour.

79. No work was ultimately performed on the 6544 Contract by personnel with the qualifications of an opto-electronic engineer.

80. Wavefront noted in its proposal for the 6544 Contract that it would be fabricating semiconductor photodetectors at the Micro- and Nano- Fabrication Laboratory ("MNFL") at the Princeton Institute for the Science and Technology of Materials ("PRISM"), located at Princeton University.

81. In the budget proposal relied upon by the United States in conjunction with the award of 6544 Contract, Wavefront proposed a \$25,000.00 direct cost for the "PRISM semiconductor nano-fab membership" on both the initial contract and the option.

82. The budget proposal submitted by Wavefront was relied upon by the United States in granting Wavefront the award of the 6544 Contract.

83. Wavefront's budget proposal for the 6544 Contract listed a total budget of \$149,888.63.

84. The 6544 Contract was awarded on July 21, 2011, with an original period of performance from July 21, 2011 through April 20, 2012.

85. The total budget allocation for the 6544 Contract was \$149,889.00, which approximates the budget proposal proffered to the United States by Wavefront, and which included \$25,000.00 for the PRISM laboratory membership.

86. The 6544 Contract specified that a partial basis for the award of the contract was the list of key personnel, and that Wavefront “agrees to assign to this contract those key persons whose resumes were submitted with the proposal, and whose names and labor categories are listed below.”

87. In the proposal that resulted in the 6544 Contract, Yao was listed as Principal Investigator, Ting Li was listed as the Senior Optoelectronic Engineer, and Sun was listed as the Chief Executive Officer.

88. With respect to the key personnel, the 6544 contract further stated that “[n]o substitutions shall be made without prior notification to the Contracting Office Point of Contact and concurrence of the Contracting Officer in accordance with this requirement. . . no key personnel substitutions will be permitted unless such substitutions are necessitated by an individual’s sudden illness, death or termination of employment.”

89. Ting Li never performed any work on the 6544 contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Senior Optoelectronic Engineer role on the project.

Contract N68335-11-C-0436

90. On or about March 30, 2011, Wavefront submitted proposal number N11A-004-0474, entitled “Micro-Plasma Turbulence Velocimetry” that ultimately resulted in the award of SBIR contract N68335-11-C-0436 (the “0436 Contract”) by the DoD.

91. The proposal indicated that Wavefront averaged 5 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

92. Wavefront proposed to conduct research on laser/electron beams in connection with observing jet plumes on jets.

93. Part of the work suggested by the proposal was to prototype a PCIC array.

94. As Key Personnel in the proposal for the 0436 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

95. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer.

96. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

97. The proposal for the 0436 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

98. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront's proposal for the 0436 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

99. The budget in the proposal relied upon by the United States in conjunction with the award of Contract 0436 included line items for, among other things, labor for 122 hours of an opto-electronic engineer at a rate of \$50/hour.

100. No work was ultimately performed on the 0436 Contract by personnel with the qualifications of an opto-electronic engineer.

101. Wavefront noted in its proposal for the 0436 Contract that it would be fabricating semiconductor photodetectors at PRISM.

102. In the budget proposal relied upon by the United States in conjunction with the award of 0436 Contract, Wavefront proposed a \$12,500.00 direct cost for the "PRISM semiconductor nano-fab membership" on both the initial contract and the option.

103. The budget proposal submitted by Wavefront was relied upon by the United States in granting Wavefront the award of the 0436 Contract.

104. Wavefront's budget proposal for the 0436 Contract listed a budget of \$79,919.34 for the first part of the Phase 1 contract, and \$69,967.64 for the option period of the proposed contract.

105. The 0436 Contract was awarded on August 15, 2011, with an original period of performance from August 15, 2011 through May 12, 2012.



106. The total budget allocation for the 0436 Contract was \$79,919.00, which approximates the budget proposal proffered to the United States by Wavefront for the first part of the Phase 1 contract, and which included \$12,500.00 for the PRISM laboratory membership in the same membership year and period of performance of both the 0366 Contract and the 6544 Contract.

107. The 0436 Contract notes that the contract is an acceptance of Wavefront's offer submitted under proposal N11A-004-0474, and notes that the "work shall be conducted in accordance with the detailed obligations to which the contractor committed itself through submission of the referenced proposal. . . ."

108. Ting Li never performed any work on the 0436 Contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Senior Optoelectronic Engineer role on the project.

Contract W81XWH-12-C-0029

109. On or about June 29, 2011, Wavefront submitted proposal number A112-110-0204, entitled "Photon Counting Solar-Blind Ultraviolet (UV) Communication System for Safe, Secure, Non-Line-Of-Sight Free-Space Data Links" that ultimately resulted in the award of Contract W81XWH-12-C-0029 (the "0029 Contract").

110. The proposal for the 0029 Contract indicated that Wavefront averaged 5 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

111. Wavefront proposed to conduct research for a potential communication system.

112. Part of the work suggested by the proposal for Phase 1 of the contract was to “design, fabricate, and characterize a solar-blind PCIC photo-detector and prove its photon counting capability.”

113. As Key Personnel in the proposal for the 0029 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

114. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer.

115. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

116. The proposal for the 0029 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

117. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront’s proposal for the 0029 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

118. The budget in the proposal relied upon by the United States in conjunction with the award of Contract 0029 included line items for, among other things, labor for 72 hours of an opto-electronic engineer at a rate of \$50/hour.

119. No work was ultimately performed on the 0029 Contract by personnel with the qualifications of an opto-electronic engineer.

120. Wavefront noted in its proposal for the 0029 Contract that it would be fabricating semiconductor photodetectors at PRISM.

121. In the budget proposal relied upon by the United States in conjunction with the award of 0029 Contract, Wavefront proposed a \$25,000.00 direct cost for the “PRISM semiconductor nano-fab membership” on the first part of 0029 Contract.

122. The budget proposal submitted by Wavefront was relied upon by the United States in granting Wavefront the award of the 0029 Contract.

123. Wavefront’s budget proposal for the 0029 Contract listed a budget of \$99,995.58 for the first part of the contract, and \$50,000.35 for the option period of the proposed contract.

124. The 0029 Contract was awarded on or about November 28, 2011, with an original period of performance from November 30, 2011 through June 29, 2012.

125. The total budget allocation for the 0029 Contract was \$99,996.00, which approximates the budget proposal proffered to the United States by Wavefront for the first part of the Phase 1 contract, and which included \$25,000.00 for the PRISM laboratory membership in the same membership year and period of performance of the 0366 Contract, the 6544 Contract, and the 0436 Contract.

126. The 0029 Contract incorporates by reference Wavefront’s proposal, which includes Wavefront’s budget.

127. Ting Li never performed any work on the 0029 Contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Senior Optoelectronic Engineer role on the project.

Contract FA8650-12-M-6257

128. On or about June 29, 2011, Wavefront submitted proposal number F112-018-0626, entitled “In-Line Sandwich of Silicon-based Photon-Counting Night Vision Sensor, Amplifier and Display” that ultimately resulted in the award of Contract FA8650-12-M-6257 (the “6257 Contract”).

129. The proposal for the 6257 Contract indicated that Wavefront averaged 5 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

130. Wavefront proposed to conduct research to develop a PCIC sandwich with a night vision sensor.

131. Part of the work suggested by the proposal for Phase 1 of the contract was to “fabricate and characterize the proposed PCIC detector and amplifier for the in-line PCIC images intensifier sandwich.”

132. As Key Personnel in the proposal for the 6257 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

133. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer.

134. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

135. The proposal for the 6257 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

136. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront’s proposal for the 6257 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

137. The budget in the proposal relied upon by the United States in conjunction with the award of Contract 6257 included line items for, among other things, labor for 79 hours of an opto-electronic engineer at a rate of \$50/hour.

138. No work was ultimately performed on the 6257 Contract by personnel with the qualifications of an opto-electronic engineer.

139. Ting Li never performed any work on the 6257 Contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Senior Optoelectronic Engineer role on the project.

140. Wavefront noted in its proposal for the 6257 Contract that it would be fabricating semiconductor photodetectors at PRISM.

141. In the budget proposal relied upon by the United States in conjunction with the award of 6257 Contract, Wavefront proposed a \$25,000.00 direct cost for the “PRISM semiconductor nano-fab membership”.

142. The budget proposal submitted by Wavefront was relied upon by the United States in granting Wavefront the award of the 6257 Contract.

143. Wavefront’s budget proposal for the 0029 Contract listed a budget of \$149,997.63, just shy of the \$150,000.00 maximum award for a Phase 1 contract.

144. The 6257 Contract was awarded on or about December 29, 2011, with an original period of performance from December 29, 2011 through September 28, 2012.

145. The total budget allocation for the 6257 Contract was \$149,998.00, which approximates the budget proposal proffered to the United States by Wavefront for the 6257 Contract, and which included \$25,000.00 for the PRISM laboratory membership in the same membership year and period of performance of the 0366 Contract, the 6544 Contract, the 0436 Contract, and the 0029 Contract.

Contract FA8650-12-M-2282

146. On or about January 11, 2012, Wavefront submitted proposal number F121-182-1634, entitled “High Temperature InAsSb Short-Wave-Infrared (SWIR) to Mid-Wave-Infrared (MWIR) Photon Counting Integrated Circuit (PCIC) Miniature Lipstick Camera” that ultimately resulted in the award of Contract FA8650-12-M-2282 (the “2282 Contract”).

147. The proposal for the 2282 Contract indicated that Wavefront averaged 5 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

148. Wavefront proposed to conduct research to again develop a PCIC, but for a miniature lipstick camera.

149. Part of the work suggested by the proposal for Phase 1 of the 2282 contract was to “design, fabricate and characterize individual pixels in the Photon-Counting Integrated Circuit (PCIC) InAsSb Focal Plane Array (FPA) for thermography.”

150. As Key Personnel in the proposal for the 2282 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

151. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer.

152. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

153. The proposal for the 2282 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

154. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront’s proposal for the 2282 Contract actually

performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

155. The budget in the proposal relied upon by the United States in conjunction with the award of Contract 2282 included line items for, among other things, labor for 40 hours of an opto-electronic engineer at a rate of \$50/hour.

156. No work was ultimately performed on the 2282 Contract by personnel with the qualifications of an opto-electronic engineer.

157. Ting Li never performed any work on the 2282 Contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Senior Optoelectronic Engineer role on the project.

158. Wavefront noted in its proposal for the 2282 Contract that it would be fabricating a proposed PCIC at PRISM.

159. In the budget proposal relied upon by the United States in conjunction with the award of the 2282 Contract, Wavefront proposed a \$25,000.00 direct cost for the “PRISM semiconductor nano-fab membership”.

160. The budget proposal submitted by Wavefront was relied upon by the United States in granting Wavefront the award of the 2282 Contract.

161. Wavefront’s budget proposal for the 2282 Contract listed a budget of \$149,994.08, just shy of the \$150,000.00 maximum award for a Phase 1 contract.

162. The 2282 Contract was awarded on or about May 15, 2012, with an original period of performance from May 15, 2012 through February 18, 2013.



163. The total budget allocation for the 2282 Contract was \$149,994.00, which approximates the budget proposal proffered to the United States by Wavefront for the 2282 Contract, and which included \$25,000.00 for the PRISM laboratory membership that overlaps the same membership year and period of performance of the 0029 Contract and the 6257 Contract.

Contract H9222-12-P-0060

164. On the same day Wavefront submitted the proposal resulting in the 2282 Contract, January 11, 2012, Wavefront submitted proposal number S121-002-0085, entitled “Short-Wave-Infrared (SWIR) Night Glow Photon-Counting Integrated Circuit (PCIC) Focal Plane Array (FPA) Detectors and Night Vision Cameras” that ultimately resulted in the award of Contract H9222-12-P-0060 (the “0060 Contract”).

165. The proposal for the 0060 Contract indicated that Wavefront averaged 5 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

166. Wavefront proposed to conduct research to again develop a PCIC, but for the purpose of using the technology for night vision cameras.

167. Part of the work suggested by the proposal for Phase 1 of the 0060 contract was to again design, fabricate, and characterize PCIC pixels.

168. As Key Personnel in the proposal for the 0060 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

169. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer.

170. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

171. The proposal for the 0060 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

172. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront’s proposal for the 0060 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

173. The budget in the proposal relied upon by the United States in conjunction with the award of Contract 0060 included line items for, among other things, labor for 160 hours of an opto-electronic engineer at a rate of \$50/hour.

174. No work was ultimately performed on the 0060 Contract by personnel with the qualifications of an opto-electronic engineer.

175. Ting Li never performed any work on the 0060 Contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Senior Optoelectronic Engineer role on the project.

176. Wavefront noted in its proposal for the 0060 Contract that it would be fabricating a proposed PCIC at PRISM.

177. In the budget proposal relied upon by the United States in conjunction with the award of the 0060 Contract, Wavefront proposed a \$25,000.00 direct cost for the “PRISM semiconductor nano-fab membership”.

178. The budget proposal submitted by Wavefront was relied upon by the United States in granting Wavefront the award of the 0060 Contract.

179. Wavefront’s budget proposal for the 0060 Contract listed a budget of \$149,994.90, just shy of the \$150,000.00 maximum award for a Phase 1 contract.

180. The 0060 Contract was awarded on or about June 14, 2012, with an original period of performance from June 14, 2012 through December 14, 2012.

181. The total budget allocation for the 6257 Contract was \$149,995.00, which approximates the budget proposal proffered to the United States by Wavefront for the 0060 Contract, and which included \$25,000.00 for the PRISM laboratory membership that overlaps the same membership year and period of performance of the 0029 Contract, the 6257 Contract, and the 2282 Contract.

Contract W15QKN-12-C-0084

182. Once again on the same day as the proposals resulting in the 2282 Contract and the 0060 Contract, Wavefront submitted proposal number A121-004-0833, entitled “High Speed Small Firearm Muzzle Flash Acoustic and Optical Detector” that ultimately resulted in the award of Contract W15QKN-12-C-0084 (the “0084 Contract”).

183. The proposal for the 0084 Contract indicated that Wavefront averaged 5 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

184. Part of the work suggested by the proposal for Phase 1 of the 0084 contract was to “design, fabricate and characterize” the PCIC proposed for the project.

185. As Key Personnel in the proposal for the 0084 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

186. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer.

187. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

188. The proposal for the 0084 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

189. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront’s proposal for the 0084 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

190. Wavefront noted in its proposal for the 0084 Contract that it would be fabricating a proposed PCIC at PRISM.

191. In the budget proposal relied upon by the United States in conjunction with the award of the 0084 Contract, Wavefront proposed a \$6,250.00 direct cost for the “PRISM semiconductor nano-fab membership”.

192. The budget proposal submitted by Wavefront was relied upon by the United States in granting Wavefront the award of the 0084 Contract.

193. Wavefront’s budget proposal for the 0084 Contract listed a budget of \$99,992.51, with a proposed option of \$49,995.03, which placed the proposal just shy of the \$150,000.00 maximum award for a Phase 1 contract.

194. The 0084 Contract was awarded on or about August 21, 2012, with an original period of performance from August 21, 2012 through February 17, 2013.

195. The total budget allocation for the 0084 Contract was \$99,992.00, which approximates the budget proposal proffered to the United States by Wavefront for the 0084 Contract, and which included \$6,250.00 for the PRISM laboratory membership that overlaps the same membership year and period of performance of the 6257 Contract, the 2282 Contract, and the 0060 Contract.

196. The Phase 1 proposals of the 2282 Contract, the 0060 Contract and the 0084 Contract all propose, in sum and substance to “design, fabricate, and characterize” pixels for PCICs.

197. The proposals for the 2282 Contract for the United States Air Force, the 0060 Contract for the United States Special Operations Command, and the 0084 Contract for the United States Army were all proposed on the same day to different agencies of the United States.

198. The Phase 1 proposals for the 2282 Contract, the 0060 Contract, and the 0084 Contract, issued to three different United States agencies on the same day, essentially proposed the same or similar scope of work for multiple contracts.

199. Wavefront did not inform any of the federal agencies involved in the award of the 2282 Contract, the 0060 Contract, or the 0084 Contract, that the work they were proposing was similar in nature to the work performed on the other contracts.

Contract N68335-13-C-0109

200. On or about June 27, 2012, Wavefront submitted proposal number N122-116-0998, entitled “Gimbal-Free Wavelength-Division-Multiplexing Free Space Optical Communication (WDMFSO) for Ocean Surface Tranceivers” that ultimately resulted in the award of Contract N68335-13-C-0109 (the “0109 Contract”).

201. The proposal for the 0109 Contract indicated that Wavefront averaged 6 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

202. Wavefront proposed to conduct research to again design, fabricate and characterize PCIC infrared detectors for a communication system.

203. As Key Personnel in the proposal for the 0109 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

204. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer.

205. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

206. The proposal for the 0109 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

207. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront’s proposal for the 0109 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

208. The budget in the proposal relied upon by the United States in conjunction with the award of Contract 0109 included line items for, among other things, labor for 41 hours of an engineer at a rate of \$50/hour.

209. No work was ultimately performed on the 0109 Contract by personnel with the qualifications of an engineer.

210. Ting Li never performed any work on the 0109 Contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Engineer role on the project.

211. Wavefront noted in its proposal for the 0109 Contract that it would be fabricating a proposed semiconductor photodetector at PRISM.

212. In the budget proposal relied upon by the United States in conjunction with the award of the 0109 Contract, Wavefront proposed a \$6,250.00 direct cost for the “PRISM semiconductor nano-fab membership”.

213. The budget proposal submitted by Wavefront was relied upon by the United States in granting Wavefront the award of the 0109 Contract.

214. Wavefront’s budget proposal for the 0109 Contract listed a budget of \$79,990.74, with an option of \$69,988.63, which together is just shy of the \$150,000.00 maximum award for a Phase 1 contract.

215. The 0109 Contract was awarded on or about November 7, 2012, with an original period of performance from November 7, 2012 through November 6, 2013.

216. The total budget allocation for the 0109 Contract was \$77,991.00, which approximates the budget proposal proffered to the United States by Wavefront for the 0109 Contract, and which included \$6,250.00 for the PRISM laboratory membership that overlaps the same membership year and period of performance of the 2282 Contract, the 0060 Contract, the 6257 Contract, and the 0084 Contract.

Contract FA8650-13-C-6378

217. On or about September 14, 2012, Wavefront submitted proposal number F2-6937 to the Department of the Air Force, entitled “In-Line Sandwich of Silicon-based Photon-Counting Night Vision Sensor, Amplifier and Display” that



ultimately resulted in the award of Contract FA8650-13-C-6378 (the “6378 Contract” or the “Sand2 Contract”).

218. The proposal for the 6378 Contract indicated that Wavefront averaged 6 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

219. The 6378 Contract, unlike all of Wavefront’s prior Phase 1 fixed price contracts, was a cost-based Phase 2 contract.

220. In the solicitation that ultimately resulted in the 6378 Contract, Wavefront proposed that it would develop and prototype a PCIC in-line night vision sandwich.

221. According the proposal, the crux of the 6378 Contract was to “design, fabricate, characterize, and demonstrate a Photon Counting Integrated Circuit (PCIC) image intensifier in-line sandwich.”

222. As Key Personnel in the proposal for the 6378 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

223. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer, despite the fact that Ting Li had not worked on the Phase 1 part of the project or any other Wavefront projects for which she was named as Key Personnel.

224. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New

Jersey and noted that the address for Wavefront's Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun's residence.

225. The proposal for the 6378 Contract also included several "Advisors, Consultants, and Subcontractors", including several distinguished professors.

226. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront's proposal for the 6378 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

227. The same "Advisors, Consultants, and Subcontractors" were listed in the proposal for the 6378 Contract despite the fact that those "Advisors, Consultants, and Subcontractors" had not performed work on the Phase 1 part of the project, or any of the other Wavefront projects for which they were named as "Advisors, Consultants, and Subcontractors".

228. The budget in the proposal relied upon by the United States in conjunction with the award of the 6378 Contract included line items for, among other things, labor for 2,180 hours of an engineer at a rate of \$50/hour over the first two base years of the 6378 Contract.

229. No work was ultimately performed on the 6378 Contract by personnel with the qualifications of an engineer.

230. Despite the fact that work was not performed on the 6378 Contract by personnel qualified as an engineer, Wavefront billed the United States for work performed by an engineer on the project.

231. Ting Li never performed any work on the 6378 Contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Senior Optoelectronic Engineer role on the project.

232. Wavefront noted in its proposal for the 6378 Contract that it would be fabricating a proposed PCIC at PRISM.

233. In the budget proposal relied upon by the United States in conjunction with the award of the 6378 Contract, Wavefront proposed a \$50,000.00 direct cost for the “PRISM semiconductor nano-fab membership”, consisting of a \$25,000.00 payment for each year of the contract.

234. The budget proposal submitted by Wavefront was relied upon by the United States in granting Wavefront the award of the 6378 Contract.

235. Wavefront’s budget proposal for the 6378 Contract listed a budget of \$749,999 for the base years of the contract, and \$249,998 for the option year of the contract, making the proposal just shy of the \$1,000,000.00 maximum award for a Phase 2 contract.

236. The 6378 Contract was awarded on or about March 7, 2013, with an original period of performance from March 7, 2013 through March 14, 2014.

237. The total budget allocation for the 6378 Contract was \$744,066.00, which is just under the \$749,999.00 budget proposal proffered to the United States by Wavefront for the 6378 Contract, and which included \$50,000.00 for the PRISM

laboratory membership that overlaps the same membership year and period of performance of the 0109 Contract.

Contract FA9453-13-M-0056

238. On or about September 26, 2012, Wavefront submitted to the United States Air Force proposal number F12B-T02-0123, entitled “Space-based Passive Night Vision Vibrometer” that ultimately resulted in the award of Contract FA9453-13-M-0056 (the “0056 Contract”).

239. The proposal for the 0056 Contract indicated that Wavefront averaged 6 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

240. Wavefront proposed to conduct research to again develop a PCIC detector and imager for a vibrometer system.

241. Part of the work suggested by the proposal for Phase 1 of the 0056 contract was for Wavefront to “design, fabricate, test and characterize Si PCIC detector pixels and limited-size arrays for low-light-level detection at 1 kHz speed.”

242. As Key Personnel in the proposal for the 0056 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

243. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

244. The proposal for the 0056 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

245. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront’s proposal for the 0056 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

246. Wavefront noted in its proposal for the 0056 Contract that it would be fabricating a proposed PCIC at PRISM.

247. In the budget proposal relied upon by the United States in conjunction with the award of the 0056 Contract, Wavefront proposed a \$25,000.00 direct cost for the “PRISM semiconductor nano-fab membership”.

248. The budget proposal and representations submitted by Wavefront were relied upon by the United States in granting Wavefront the award of the 0056 Contract.

249. Wavefront’s budget proposal for the 0056 Contract listed a budget of \$149,995.72, just shy of the \$150,000.00 maximum award for a Phase 1 contract.

250. The 0056 Contract was awarded on or about February 6, 2013, with an original period of performance from February 6, 2013 through November 15, 2013.

251. The total budget allocation for the 0056 Contract was \$149,996.00, which approximates the budget proposal proffered to the United States by Wavefront for the 0056 Contract, and which included \$25,000.00 for the PRISM laboratory membership that overlaps the same membership year and period of

performance of the 6378 Contract, the 2282 Contract, the 0084 Contract, and the 0109 Contract.

Contract NNX13CA48P

252. On or about December 17, 2012, Wavefront submitted proposal number T8.03-9846 to NASA, entitled “Conjugate Etalon Spectral Imager (CESI) & Scanning Etalon Methane Mapper (SEMM)” that ultimately resulted in the award of Contract NNX13CA48P (the “48P Contract”).

253. The proposal for the 48P Contract was a proposal for a STTR award in which Wavefront proposed working in conjunction with Utah State University.

254. According to the proposal, Wavefront had “primary responsibility for PCIC HPT and PT detector technology, i.e. development of the VNIR HPT focal plane, including PCIC design, fabrication, integration and detector-lever characterization.”

255. As Key Personnel in the proposal for the 48P Contract, Wavefront listed Yao as the Project Manager/Chief Technology Officer for Wavefront and Dr. Alan Marchant as the Principal Investigator from Utah State.

256. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

257. On or about April 13, 2013, the Space Dynamics Laboratory at Utah State University sent a letter to Yao indicating that Dr. Marchant would not be

available to serve as the Principal Investigator (“PI”) on the pending award, and supporting Yao as the PI.

258. In the budget proposal relied upon by the United States in conjunction with the award of the 48P Contract, Wavefront proposed a \$25,000.00 direct cost for the “PRISM semiconductor nano-fab membership”.

259. The budget items submitted by Wavefront were relied upon by the United States in granting Wavefront the award of the 48P Contract.

260. Wavefront’s proposal for the 48P Contract listed a proposed budget of \$124,994.00 for a Phase 1 contract.

261. The 48P Contract was awarded on or about May 13, 2013, with an original period of performance from May 23, 2013 through May 22, 2014.

262. The total budget allocation for the 48P Contract was \$124,994.00, which approximates the budget proposal proffered to the United States by Wavefront for the 48P Contract, and which included \$25,000.00 for the PRISM laboratory membership that overlaps the same membership year and period of performance of the 0109 Contract, the 0056 Contract, and the 6378 Contract.

Contract HQ0147-14-C-7896

263. On or about June 26, 2013, Wavefront submitted to the United States Department of Defense, Missile Defense Agency, a proposal entitled “Visible and Near-Infrared (VNIR) Photon-Counting Integrated Circuit (PCIC) Imager” that ultimately resulted in the award of Contract HQ0147-14-C-7896 (the “7896 Contract”).

264. The proposal for the 7896 Contract indicated that Wavefront averaged 6 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

265. Wavefront proposed to conduct research to again develop a PCIC detector and imager.

266. Part of the work suggested by the proposal for the 7896 contract was for Wavefront to “experimentally prove the concept of the PCIC imager. . . experimentally fabricate and characterize the PCIC pixel; compare PCIC experimental data with model, simulations, and analyses (MS&A), thereby proving the feasibility of the PCIC technology.”

267. Based on its proposal, Wavefront was attempting with the 7896 award to develop PCIC imaging technology that it had already received funding to develop in at least 12 other federal SBIR contracts.

268. Wavefront did not disclose in its proposal that it had been attempting to develop the same PCIC imaging technology on 12 other government contracts.

269. As Key Personnel in the proposal for the 7896 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

270. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer, despite the fact that Ting Li had not worked on the any other Wavefront projects for which she was named as Key Personnel.

271. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New



Jersey and noted that the address for Wavefront's Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun's residence.

272. The proposal for the 7896 Contract also included several "Advisors, Consultants, and Subcontractors", including several distinguished professors.

273. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront's proposal for the 7896 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

274. The same "Advisors, Consultants, and Subcontractors" were listed in the proposal for the 7896 Contract despite the fact that those "Advisors, Consultants, and Subcontractors" had not performed work on any other Wavefront projects for which they were named as "Advisors, Consultants, and Subcontractors".

275. The budget in the proposal relied upon by the United States in conjunction with the award of the 7896 Contract included line items for, among other things, labor for 201 hours of an engineer at a rate of \$50/hour, for a total of \$10,050.

276. Ting Li never performed any work on the 7896 Contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Senior Optoelectronic Engineer role on the project.

277. No work was ultimately performed on the 7896 Contract by personnel with the qualifications of an engineer.

278. Wavefront noted in its proposal for the 7896 Contract that it would be fabricating a proposed PCIC at PRISM.

279. In the budget proposal relied upon by the United States in conjunction with the award of the 7896 Contract, Wavefront indicated that the membership to PRISM would be included as part of the overhead costs.

280. The budget proposal and representations submitted by Wavefront were relied upon by the United States in granting Wavefront the award of the 7896 Contract.

281. Wavefront's budget proposal for the 7896 Contract listed a budget of \$124,999.20.

282. The 7896 Contract was awarded on or about December 20, 2013, with an original period of performance from December 20, 2013 through June 20, 2014.

Contract M67854-14-C-6530

283. On or about August 20, 2013, Wavefront submitted to the United States Department of the Navy a proposal entitled "Hyper-Spectral Night-Vision Camera" that ultimately resulted in the award of Contract M67854-14-C-6530 (the "6530 Contract" or the "Spot0 Contract").

284. The proposal for the 6530 Contract was for a Phase 2 contract based off of the Phase 1 work completed in the 6544 Contract.

285. The 6530 Contract was a cost-based contract as opposed to the fixed-price contract issued in the Phase 1 part of the project.

286. The proposal for the 6530 Contract indicated that Wavefront averaged 6 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

287. Wavefront proposed to conduct research to again develop a PCIC focal plane array.

288. Part of the work suggested by the proposal for Phase 2 of the 6530 Contract was the “development, prototyping and demonstration of the InGaAs PCIC focal plane array (FPA) imager.”

289. As Key Personnel in the proposal for the 6530 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

290. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer, despite the fact that Ting Li had not worked on the Phase 1 part of the project or any of other Wavefront projects for which she was named as Key Personnel.

291. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

292. The proposal for the 6530 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors that had been previously listed in several other contracts awarded to Wavefront.

293. The same “Advisors, Consultants, and Subcontractors” were listed in the proposal for the 6530 Contract despite the fact that those “Advisors, Consultants, and Subcontractors” had not performed work on the Phase 1 part of the project, or any of the other Wavefront projects for which they were named as “Advisors, Consultants, and Subcontractors”.

294. The budget in the proposal relied upon by the United States in conjunction with the award of the 6530 Contract included line items for, among other things, labor for 1165 hours of an engineer at a rate of \$50/hour, for a total of \$58,250.

295. Ting Li never performed any work on the 6530 Contract, and Wavefront did not provide notification that it intended to substitute Ting Li with another person to perform the work of the Senior Optoelectronic Engineer role on the project.

296. No work was ultimately performed on the 6530 Contract by personnel with the qualifications of an engineer.

297. Despite the fact that no person with the requisite qualifications performed the work of an engineer on the project, Wavefront nevertheless billed the United States, and was paid for, work performed by an engineer on the project.

298. The fact that work was performed by unqualified personnel on the project that was billed to the United States was a material misrepresentation.

299. Had the government personnel known that Wavefront was billing for work performed by unqualified personnel, it would not have made payment to Wavefront for that work.

300. Wavefront noted in its proposal for the 6530 Contract that it would be fabricating a proposed PCIC at PRISM.

301. In the budget proposal relied upon by the United States in conjunction with the award of the 6530 Contract, Wavefront indicated that the \$25,000 yearly membership to PRISM would be included as part of the overhead costs.

302. The budget proposal and representations submitted by Wavefront were relied upon by the United States in granting Wavefront the award of the 6530 Contract.

303. Wavefront's budget proposal for the 6530 Contract listed a budget of \$499,998 for the base year, and two option years with a cost of \$249,995 and \$249,993, respectively. The total proposed cost of the Phase 2 project on the 6530 Contract was \$999,986, which was just below the \$1 million threshold for a Phase 2 contract at the time.

304. The 6530 Contract was awarded on or about January 15, 2014, with an original period of performance from January 15, 2014 through July 12, 2016.

Contract NNX14C67C

305. On or about May 30, 2014, Wavefront submitted to NASA proposal number T8.03-9846 entitled "Conjugate Etalon Spectral Imager (CESI) & Scanning

Etalon Methane Mapper (SEMM)” that ultimately resulted in the award of Contract NNX14C67C (the “67C Contract” or the “CESI2 Contract”).

306. The 67C Contract was a cost-based, Phase 2 STTR contract.

307. The proposal for the 67C Contract indicated that Wavefront had 6 employees, even though the only employees or principals associated with Wavefront were Yao and Sun prior to this contract proposal.

308. Part of the work proposed for the 67C Contract, was the “development of the SWIR HPT focal plane, including PCIC design, fabrication, integration, and detector-level characterization.”

309. As Key Personnel in the proposal, Wavefront listed Yao as the Principal Investigator and CTO of Wavefront, and Sun as the CEO of Wavefront.

310. Wavefront additionally listed Ting Li as Key Personnel, in the role of Senior Optoelectronic Engineer, despite the fact that Ting Li had not worked on the Phase 1 part of the project or any of other Wavefront projects for which she was named as Key Personnel.

311. In the proposal, Lucy Liu was included as a senior chemist in the Key Personnel section of the proposal.

312. Lucy Liu is Lance Sun’s wife, and does not have a degree in chemistry.

313. Lucy Liu does not have the requisite qualifications to be considered a senior chemist.

314. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New

Jersey and noted that the address for Wavefront's Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun's residence.

315. The proposal for the 67C Contract also included several distinguished consultants and professors in support of the project.

316. Upon information and belief, none of the consultants or professors listed in Wavefront's proposal for the 67C Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project.

317. The same consultants and professors were listed in the proposal for the 67C Contract despite the fact that those consultants and professors were listed in the proposal for the Phase 1 part of the project, and upon information and belief, had not performed work on the Phase 1 part of the project, or any of the other Wavefront projects for which they were named as "Advisors, Consultants, and Subcontractors".

318. Wavefront's budget proposal for the 67C Contract listed a budget of \$749,999.25.

319. The 67C Contract was awarded on or about September 18, 2014, with an original period of performance from September 18, 2014 through September 16, 2016.

Contract HQ0147-15-C-7245

320. On or about September 22, 2014, Wavefront submitted to the United States Department of Defense, Missile Defense Agency, proposal B2-2105 entitled "Visible and Near-Infrared (VNIR) Photon-Counting Integrated Circuit (PCIC)

Imager” that ultimately resulted in the award of Contract HQ0147-15-C-7245 (the “7245 Contract”).

321. The proposal for the 7245 Contract indicated that Wavefront averaged 6 employees over the previous 12 months, even though the only employees or principals associated with Wavefront were Yao and Sun.

322. The 7245 Contract was a cost-based Phase 2 contract.

323. As part of the work suggested by the Phase 2 portion of the contract, Wavefront indicated that it would “prototype the PCIC imager”, then characterize it and test it.

324. As part of this Phase 2 proposal, Wavefront was again attempting to develop PCIC imaging technology that it had already received funding to develop in numerous other federal SBIR contracts.

325. As Key Personnel in the proposal for the 7245 Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

326. Wavefront additionally listed a semiconductor processing engineer, Zuzanna Lewicka (“Lewicka”), as Key Personnel, despite the fact that Lewicka had not been named as Key Personnel in the Phase 1 part of the project, and was not hired by Wavefront until March, 2014, approximately 4 months before the 7896 Contract (the Phase 1 for the 7245 Phase 2 Contract) was due to end.

327. In her time at Wavefront, Lewicka merely performed tasks provided to her by Yao, without an understanding of who the specific customer was or how the fabricated devices would be utilized in an end product.



328. The proposal stated that Wavefront had a “unique high-sensitivity low-noise photodetector characterization laboratory” located in Basking Ridge, New Jersey and noted that the address for Wavefront’s Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun’s residence.

329. The proposal for the 7245 Contract also included several “Advisors, Consultants, and Subcontractors”, including several distinguished professors.

330. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront’s proposal for the 7245 Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

331. The same “Advisors, Consultants, and Subcontractors” were listed in the proposal for the 7245 Contract despite the fact that those “Advisors, Consultants, and Subcontractors” had not performed work or advised on the Phase 1 part of the project, or any of the other Wavefront projects for which they were named as “Advisors, Consultants, and Subcontractors”.

332. The budget in the proposal relied upon by the United States in conjunction with the award of the 7245 Contract included line items for, among other things, labor for 1,384 hours of an engineer at a rate of \$28.85/hour, for a total of \$39,928.40, 2,080 hours for work by a scientist at \$70.00/hour for a total of \$145,600, and 1,600 hours for work by the Principal Investigator and CTO at a rate of \$12/hour, for a total of \$19,200.

333. Wavefront noted in its proposal for the 7245 Contract that it would be fabricating a proposed PCIC at PRISM.

334. The budget proposal and representations submitted by Wavefront were relied upon by the United States in granting Wavefront the award of the 7245 Contract.

335. Wavefront's budget proposal for the 7245 Contract listed a budget of \$999,999.42, just shy of the \$1 million maximum for SBIR Phase 2 contracts at the time.

336. The 7245 Contract was awarded on or about June 4, 2015, with an original period of performance from June 4, 2015 through June 4, 2017.

Contract NNX15CS57P

337. On or about January 28, 2015, Wavefront proposal number T8.01-9857 to NASA entitled "Short Wave Focal Plane Technology for Close-Range Active Mineralogy Mapping (SWIFT-CAMM)" that ultimately resulted in the award of Contract NNX15CS57P (the "57P Contract").

338. The 57P Contract was a Phase 1 STTR contract.

339. As part of the 57P Contract scope of work, Wavefront proposed to again develop a PCIC focal plane array imager. Specifically, Wavefront proposed to "develop and prototype a limited-size array of PCIC detector pixels as well as design and model the active SWIR spectrometer instrument."

340. As Key Personnel in the proposal for the 57P Contract, Wavefront listed Yao as the principal investigator, and listed Sun as co-founder and CEO.

341. The proposal also listed Zuzanna Lewicka as Key Personnel, along with Lance Sun's wife, Lucy Liu.

342. Lucy Liu was again represented to be a senior chemical engineer despite not having a degree in chemistry, or the requisite experience to justify that title.

343. The proposal stated that Wavefront had a "unique high-sensitivity low-noise photodetector characterization laboratory" located in Basking Ridge, New Jersey and noted that the address for Wavefront's Basking Ridge laboratory was 7 Johnston Circle, Basking Ridge, New Jersey, Sun's residence.

344. The proposal for the 57P Contract also included several "Advisors, Consultants, and Subcontractors", including several distinguished professors.

345. Upon information and belief, none of the consultants, advisors, or subcontractors listed in Wavefront's proposal for the 57P Contract actually performed any work on the contract or advised Wavefront or its employees regarding the project that was being proposed.

346. Wavefront noted in its proposal for the 57P Contract that it would be fabricating a proposed PCIC at PRISM.

347. In the budget proposal relied upon by the United States in conjunction with the award of the 57P Contract, Wavefront proposed a \$25,000.00 overhead cost for the "PRISM semiconductor nano-fab membership".

348. The proposal noted that the PRISM semiconductor nano-fab membership was exclusive to the 57P Contract, despite the fact that Wavefront was

using the PRISM lab for at least three other concurrent federal government contracts.

349. The budget proposal and representations submitted by Wavefront were relied upon by the United States in granting Wavefront the award of the 57P Contract.

350. Wavefront's budget proposal for the 57P Contract listed a budget of \$124,976.33.72.

351. The 57P Contract was awarded on or about June 16, 2015, with an original period of performance from June 15, 2015 through June 17, 2016.

352. The total budget allocation for the 57P Contract was \$124,976.00, which approximates the budget proposal proffered to the United States by Wavefront for the 57P Contract.

### **WAVEFRONT'S FALSE CLAIMS**

#### **Personnel**

353. Upon information and belief, Sun and Yao collaborated with each other on the content of the proposals to be submitted on each of the aforementioned contracts.

354. The proposal for all of the government contracts were submitted and certified by either Sun or Yao.

355. Wavefront repeatedly made affirmative, material misrepresentations that resulted in the United States both awarding it contracts and remitting payments.

356. Wavefront represented in the Key Personnel section of almost all of its proposals that Ting Li would be working as a Senior Optoelectronic Engineer on the various projects.

357. In reviewing the proposals, government evaluators reviewed the Key Personnel section of those proposals, and the qualifications and experience of the listed Key Personnel were factored into the evaluation of each proposal.

358. The qualifications and experience of Ting Li, and her addition in the Key Personnel section of the proposals, were relied upon by government personnel in evaluating Wavefront's proposals.

359. Ting Li's addition to the Key Personnel section of its proposals ultimately enhanced Wavefront's evaluation scores.

360. Defendants knew when they proposed Ting Li as a Senior Optoelectronic Engineer and Key Personnel in the proposals that Ting Li was not going to be working on the projects being proposed.

361. Ting Li never worked on any of Wavefront's projects.

362. The proposed labor for Ting Li on all of the proposals, inclusive of Overhead, General and Administrative Costs, and Profit for Wavefront, exceeded \$550,000.00.

363. Ting Li only performed minimal consulting services for Wavefront.

364. Wavefront's timesheets indicate that Ting Li worked approximately 8 hours for Wavefront in the years 2012-2013.

365. From 2011 through 2017, Ting Li was paid a total of \$374.39 by Wavefront.

366. Wavefront's continued use of Ting Li's qualifications and experience in its proposals, despite knowledge that Ting Li was not working on Wavefront projects, were material misrepresentations that resulted in the award of contracts to Wavefront that it might not otherwise have received.

367. Wavefront represented in each of its proposals that it had either 5 or 6 full time employees.

368. In the years 2011 to 2014, when Wavefront proposed the majority of its contracts, the only people working for Wavefront were its principals, Yao and Sun.

369. Wavefront did not have any other employees other than Yao or Sun during that time period.

370. Even after hiring Zuzanna Lewicka in 2014 and using Sun's wife, Lucy Liu, to perform work for the company, Wavefront never had as many as the 5 employees that it claimed in its proposals.

371. Upon information and belief, Wavefront asserted that it had 5 or 6 employees in order to be perceived as a more established company than it was.

372. In its cost proposals, Wavefront proposed direct labor costs of approximately \$232,400.00 for an optoelectronic engineer or engineer.

373. When the direct labor costs for the optoelectronic engineer/engineer are grossed up for Overhead, General and Administrative expenses, and Proposed

Profit, Wavefront proposed a total of \$560,293.61 for direct labor costs for those labor categories.

374. Ting Li was the only person in any of Wavefront's proposals with the qualifications to do the work of an optoelectronic engineer/engineer.

375. In the event that Wavefront sought to switch out Key Personnel in the contract, it was required to inform the agency contracting officer(s).

376. Since Ting Li did not perform any work on Wavefront's contracts, Wavefront did not have anyone with the qualifications on its staff to do the work they proposed for Ting Li.

377. Wavefront never informed any of the contracting officer(s) that the work proposed for Ting Li was going to be performed by another, qualified employee.

378. Lucy Liu does not have a degree in optoelectronic engineering, engineering, or chemistry.

379. Lance Sun does not have a degree in optoelectronic engineering, engineering, or chemistry.

380. Despite their lack of qualifications, Wavefront's timesheets reflect that Lucy Liu worked approximately 2,251 hours and Lance Sun worked approximately 1,998 hours on Wavefront's SBIR/STTR projects.

381. Lewicka, a Wavefront employee from 2014 to 2017, also worked approximately 3,416 hours for Wavefront based on Wavefront's timesheets.

382. Lewicka, worked in the PRISM lab doing fabrication work, but she was never advised which project she was working on, and was never briefed on the end goals of any of Wavefront's projects.

383. Wavefront's knowing misrepresentations about the qualifications of the personnel performing work on its projects, and its subsequent requests for payment from agencies of the United States were material to the decision to make payment to Wavefront.

384. Had the government personnel been aware of Wavefront's misrepresentations regarding its personnel and the labor performed on the projects, Wavefront would not have been awarded the contracts, and/or would not have been paid under the contracts.

#### Facilities

385. Wavefront represented in all of its proposals that it had a "unique high-sensitivity low-noise photodetector characterization laboratory" located at 7 Johnston Circle, Basking Ridge, New Jersey.

386. 7 Johnston Circle is not a commercial laboratory, but rather Sun's personal residence.

387. Wavefront did not disclose to the United States in any of its proposals that its "lab" was simply some instrumentation placed inside of its CEO's home.

388. Wavefront did not disclose in any of its proposals that 7 Johnston Circle was Sun's residential address.

389. Wavefront's proposals were thus misleading,



390. The facilities and equipment of bidders for SBIR/STTR contracts are considered in evaluating bids for a contract award.

391. Wavefront also represented in its proposals that the PRISM lab would be used to fabricate its PCIC for each of its projects.

392. The PRISM lab is located at Princeton University, and is used by both students and faculty.

393. Several of the projects worked on by Wavefront were subject to the International Traffic in Arms Regulations (“ITAR”), which restrict and control the export of defense and military-related technology.

394. ITAR seeks to ensure that foreign persons or their representatives do not have access to work, equipment, or data that is ITAR controlled.

395. The PRISM lab at Princeton does not restrict access by foreign nationals or their representatives, and is thus not compliant with ITAR.

396. Wavefront did not disclose that it would be performing work in a laboratory that was not ITAR controlled.

397. The proposals do not indicate that Wavefront would have to share the lab with other personnel at Princeton University, that its time in the lab would be limited, or that the lab in which it would be performing its work was not ITAR compliant.

398. Wavefront’s omissions of these facts constitute material misrepresentations that, if known to the United States, would have likely precluded Wavefront from being awarded the subject contracts.

PRISM Payments

399. At all times relevant herein, the PRISM lab at Princeton charged a yearly fee of \$25,000 for its “nano-fab membership”.

400. As set forth in detail above, from 2011 through 2016, Wavefront proposed its PRISM lab memberships as a direct cost of approximately \$237,750.00 over all of its proposals.

401. In addition, Wavefront proposed its PRISM lab memberships as an Overhead cost of approximately \$100,000.00 over all of its proposals.

402. Wavefront thus proposed to the various agencies of the United States PRISM lab membership fees of approximately \$337,750.00 for its PRISM lab membership.

403. Wavefront paid approximately \$150,000.00 from 2011 to 2016 for its PRISM membership.

404. Wavefront thus proposed to agencies of the United States membership fees for PRISM that exceeded its actual cost by approximately \$187,750.00.

405. Wavefront’s proposals were relied upon by the agencies of the United States in awarding each of its SBIR/STTR contracts.

406. In fact, almost all of Wavefront’s SBIR/STTR contract awards closely matched its cost proposals.

407. The overestimation in Wavefront’s proposals of its PRISM lab membership fees were material misrepresentations that, if known at the time, would have precluded the award of their SBIR/STTR contracts and/or at the very

least, reduced the amount of the award by the overbilling for the PRISM membership fees.

**COUNT ONE**

**[False Claims Act – Presenting False or Fraudulent Claims to the United States, 31 U.S.C. § 3729(a)(1)(A)]**

408. The United States repeats and re-alleges the allegations set forth in all of the preceding paragraphs as if set forth fully at length herein.

409. As set forth above, Defendants Wavefront, Jie Yao, and Feng Sun, individually and acting in concert with each other, presented to the United States for payment or approval false and fraudulent claims, with knowledge that they were false, and/or with deliberate ignorance of their truth or falsity, and/or with reckless disregard for their truth or falsity.

410. Plaintiff United States has sustained damages as a result of the false statements of Defendants, in an amount to be determined at trial, and is entitled to a civil penalty as required by law for each violation.

**COUNT TWO**

**[False Claims Act – Causing to Be Presented False or Fraudulent Claims to the United States, 31 U.S.C. § 3729(a)(1)(A) and 31 U.S.C. § 3729(a)(1)(C)]**

411. The United States repeats and re-alleges the allegations set forth in all of the preceding paragraphs as if set forth fully at length herein.

412. As set forth above, in connection with the foregoing schemes, Defendants and their co-conspirators knowingly, or with deliberate ignorance or in reckless disregard for the truth conspired to submit or cause to be submitted, a false

claim, or conspired to make, use or cause to be made or used false records and statements material to false and fraudulent claims that were made to the United States, and took actions to further these conspiracies.

413. By reason of these false claims, the United States has sustained damages in an amount to be determined at trial, and is entitled to a civil penalty as required by law for each violation.

### **COUNT THREE**

#### **[Violations of the False Claims Act – Making or Using a False Record or Statement, 31 U.S.C. § 3729(a)(1)(B)]**

414. The United States repeats and re-alleges the allegations set forth in all of the preceding paragraphs as if set forth fully at length herein.

415. In connection with the foregoing schemes, Defendants knowingly, or with deliberate ignorance or in reckless disregard for the truth, made, used or caused to be made and used, false records and statements material to false and fraudulent claims that were made to the United States.

416. By reason of the aforementioned false claims, the United States has sustained damages in an amount to be determined at trial, and is entitled to a civil penalty as required by law for each violation.

### **COUNT FOUR**

#### **[Common Law Fraud]**

417. The United States repeats and re-alleges the allegations set forth in all of the preceding paragraphs as if set forth fully at length herein.

418. Defendants made material misrepresentations of fact, with knowledge of, or in reckless disregard of, their truth, in connection with claims for payment submitted by, or on behalf of, Defendants, to the United States.

419. Defendants intended that the United States rely upon the accuracy of the false representations referenced above.

420. The United States in fact relied upon the accuracy of the false representations referenced above when it issued payments to the Defendants.

421. The United States made substantial payments of money in justifiable reliance upon Defendants' false representations.

422. Defendants actions caused the United States to sustain damages in an amount to be determined at trial.

### **COUNT FIVE**

#### **[Unjust Enrichment]**

423. The United States repeats and re-alleges the allegations set forth in all of the preceding paragraphs as if set forth fully at length herein.

424. By reason of the payments made to Defendants by the United States, Defendants were unjustly enriched.

425. The circumstances of Defendants receipt of SBIR and STTR contracts, and subsequent payments by the United States are such that, in equity and good conscience, Defendants are liable to account for and pay such amounts which were paid to them that should not have been paid.

**COUNT SIX**

**[Payment by Mistake]**

426. The United States repeats and re-alleges the allegations set forth in all of the preceding paragraphs as if set forth fully at length herein.

427. This is a claim for the recovery of monies paid by the United States to Defendants by mistake.

428. The United States, acting in reasonable reliance on the accuracy and truthfulness of the information contained in the claims, paid Defendants certain sums of money to which it was not entitled, and are thus liable to account and pay such amounts back to the United States.

**PRAYER FOR RELIEF**

WHEREFORE, the United States demands judgment against the Defendants for damages, civil penalties, attorneys' fees, costs, and any other relief that the Court may deem just and proper.

Respectfully submitted,

CRAIG CARPENITO  
United States Attorney

s/ Mark C. Orlowski  
By: MARK C. ORLOWSKI  
Assistant U.S. Attorney

Dated: April 10, 2020